Space Weather Forecast

Issued on Monday, 29 November 2021 at 00:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: No significant activity expected.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was very low, with no significant flares observed. There are three sunspots on the Earth-facing disc. There are two bipolar region in the southwest, one which has been declining and another which has gradually increased in size, however both are magnetically simple. A further small unipolar spot is positioned in the northeast disc, and this is also a stable region. No Earth-directed coronal mass ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: The solar wind conditions were dominated by the trailing portion of a weak CME which arrived on the 27th. The wind speed declined from peaking at slightly elevated levels of near 420km/s, to be at background around 350-380km/s through the day. The magnetic field carried by this wind was at Moderate levels at first, but declined to more typical values through the day. The north-south component of the field had a brief spell of being moderately negative (southward) at first, and then a more prolonged period of weaker negative values from 28/1900 UTC. This resulted in Quiet to Unsettled geomagnetic activity.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be low or very low, with a chance of common class flares, mainly from the more complicated and larger sunspot region in the southwest.

Solar Wind / Geomagnetic Activity: A CME from a filament eruption early on the 26 Nov has been assessed as likely missing, but with low confidence, giving a small chance of some impact at Earth late day 1 or day 2 (29th or 30th). There may also be weak additional enhancements from as Earth encounters the fast winds from various coronal holes on the Earth-facing side of the Sun. Subsequent Geomagnetic activity is expected to mostly Quiet with Unsettled throughout, but with an ongoing chance Active intervals, and a very slight chance of G1/Minor Storms on all days.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms observed.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	5	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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